

CLAIMS

1. A boundary acoustic wave device using a boundary
acoustic wave which propagates along a boundary between a
5 first medium layer and a second medium layer,

wherein the sound velocity of the second medium layer
is low as compared to that of the first medium layer, and
when the wavelength of the boundary acoustic wave is
represented by λ , the thickness of the second medium layer
10 is set to 7λ or more.

2. A boundary acoustic wave device using a boundary
acoustic wave which propagates along a boundary surface
between a first medium layer and a second medium layer,
15 wherein a structure for scattering an acoustic wave is
provided for at least one surface of the first and the
second medium layer at the side opposite to the boundary
surface therebetween.

20 3. The boundary acoustic wave device according to Claim 2,
wherein the sound velocity of the second medium layer is low
as compared to that of the first medium layer, and the
structure for scattering an acoustic wave is provided for
the second medium layer.

4. The boundary acoustic wave device according to Claim 2 or 3, wherein the structure for scattering an acoustic wave is at least one recess portion and/or at least one protrusion portion provided for at least one surface of the medium layers at the side opposite to the boundary surface.

5. The boundary acoustic wave device according to Claim 4, wherein, when the wavelength of the boundary acoustic wave is represented by λ , the depth of the recess portion or the height of the protrusion portion is 0.05λ or more.

6. The boundary acoustic wave device according to Claim 4 or 5, wherein, when the wavelength of the boundary acoustic wave is represented by λ , the pitch between the recess portions and/or the pitch between the protrusion portions is 1λ or more.

7. The boundary acoustic wave device according to one of Claims 2 to 6, wherein, when the wavelength of the boundary acoustic wave is represented by λ , the thickness of the medium layer on which the structure for scattering an acoustic wave is provided is 7λ or less, the thickness of the medium layer being the distance between the boundary surface and the surface opposite thereto.

8. The boundary acoustic wave device according to one of Claims 2 to 7, wherein the first medium layer is composed of a piezoelectric substrate containing Li, the second medium layer is composed of SiO_2 , and at least one recess portion
5 and/or at least one protrusion portion is formed on a surface of the second medium layer composed of SiO_2 .

9. The boundary acoustic wave device according to one of Claims 1 to 8, wherein an electroacoustic transducer for
10 driving a boundary acoustic wave is formed between the first and the second medium layers.

10. The boundary acoustic wave device according to Claim 9, wherein a reflector is further provided at the boundary
15 between the first medium layer and the second medium layer.

11. The boundary acoustic wave device according to one of Claims 2 to 9, wherein an exterior layer material is further provided on the surface of the medium layer on which at
20 least one recess portion and/or at least one protrusion portion is provided.

12. The boundary acoustic wave device according to one of Claims 1 to 11, wherein a third medium layer having a sound
25 velocity lower than that of the first and second medium

layers is provided therebetween and functions as a boundary layer along which the boundary acoustic wave propagates.